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## **Proposed Action Memorandum**

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**Seep Collection and Treatment  
Operable Unit No. 7 — Present Landfill (IHSS 114) and  
Inactive Hazardous Waste Storage Area (IHSS 203)**

**Draft Report**

October 13, 1994

Rocky Flats Environmental Technology Site  
Golden, Colorado

# **Proposed Action Memorandum**

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Operable Unit No. 7 — Present Landfill (IHSS 114) and  
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Rocky Flats Environmental Technology Site  
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Rocky Flats Environmental Technology Site  
OU 7 Draft Proposed Action Memorandum

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**Proposed Action Memorandum  
Seep Collection and Treatment  
Operable Unit No. 7 — Present Landfill (IHSS 114) and  
Inactive Hazardous Waste Storage Area (IHSS 203)**

**APPROVED BY:**

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## EXECUTIVE SUMMARY

This Seep Collection and Treatment Proposed Action Memorandum presents the U.S. Department of Energy's proposed action to address the seep flowing from the Present Landfill into the East Landfill Pond, Operable Unit (OU) No. 7 at the Rocky Flats Environmental Technology Site. The overall objective of the collection system is to eliminate discharge to a surface water body.

Compliance with potential applicable or relevant and appropriate requirements will be achieved through collection of the seep; treatment, as required, of the collected flow to reduce concentrations of volatile organic compounds, semi-volatile organic compounds, metals, and radionuclides; and subsequent release of treated water to surface waters.

Water will be collected at the seep (SW097) with a precast manhole base section installed downgradient of the seep. Perforated high-density polyethylene pipe laid in drain rock will collect and feed flow into the collection sump. A submersible pump will deliver seepage from the sump to storage tanks located on the ridge immediately north of the East Landfill Pond dam along an existing gravel road. Leachate will then be transported by tanker truck to the designated treatment facility.

Construction is scheduled for May 1995 to August 1995. The collection system is designed to be compatible with source containment as a presumptive remedy for final closure of the landfill in July 1997.

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## 1. PURPOSE

The purpose of this Seep Collection and Treatment Proposed Action Memorandum (PAM) is to request approval of the U.S. Department of Energy's (DOE's) proposed action for the collection and treatment of water seeping from the Present Landfill into the East Landfill Pond, Operable Unit (OU) No. 7 at the Rocky Flats Environmental Technology Site (RFETS). RFETS is located in Jefferson County, Colorado, as shown in Figure 1-1. This document is the first of two remedial action documents planned for OU 7. The second document, the Landfill Closure Interim Measure/Interim Remedial Action (IM/IRA) Decision Document, will focus on landfill closure and groundwater remediation using the presumptive remedy approach (EPA, 1993).

The overall objective of the seep collection system is to eliminate discharge to a surface water body. The proposed action will achieve potential applicable or relevant and appropriate requirements (ARARs), if practicable, through collection and treatment of seep water to remove organics, metals, and radionuclides.

Environmental restoration activities at RFETS are pursuant to an Interagency Agreement (IAG) signed by the DOE, the U.S. Environmental Protection Agency (EPA), and the State of Colorado Department of Public Health and Environment (CDPHE) dated January 22, 1991 (DOE, 1991). CDPHE is the lead regulatory agency for the IAG program at OU 7.



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## 2. BACKGROUND AND DESCRIPTION

The location and mission of RFETS, location and history of remedial actions at OU 7, characteristics of the seepage, and other actions to date are described in the following sections.

### 2.1 Rocky Flats Environmental Technology Site

The RFETS is located at the foot of the Rocky Mountains in northern Jefferson County, Colorado. The site is approximately 16 miles northwest of Denver in Sections 1 through 4 and 9 through 15 of Township 2 south, Range 70 west. It is near the suburban communities of Westminster, Broomfield, and Arvada. The site covers approximately 6,550 acres. Approximately 400 acres were used for industrial activities.

The primary mission of RFETS has been production of components for nuclear weapons. Operations at the plant began in 1952. In 1989, many of the production functions at the plant were suspended. In January 1992, the decision was made not to resume plutonium parts production. The site is currently in transition from a weapons production site to a materials management, environmental restoration, and waste management site.

More detailed site background information is presented in the OU 7 Final Work Plan Technical Memorandum (OU 7 Final Work Plan) (DOE, 1994a).

### 2.2 OU 7 Site Description

OU 7 is located north of the industrial area at the western end of No Name Gulch. For the purpose of selecting remedial actions, OU 7 is divided into the following four areas:

- Present Landfill (Individual Hazardous Substance Site [IHSS] 114)
- Inactive Hazardous Waste Storage Area (IHSS 203)
- East Landfill Pond
- Spray evaporation areas adjacent to the East Landfill Pond (including IHSS 167.2 and IHSS 167.3)

Each of these areas is shown in Figure 2-1 and described in detail in the OU 7 Final Work Plan (DOE, 1994a).

The seep addressed in this report is located near the base of the east face of the Present Landfill (IHSS 114). Operation of the landfill was initiated in 1968 to provide for disposal of nonradioactive solid wastes and will continue until the landfill is closed in 1997. The Present Landfill covers an area of approximately 27 acres.

In 1973, tritium was detected in seepage draining from the landfill. In response, monitoring of waste for radionuclides prior to burial was initiated to prevent further disposal of radioactive material, and interim response measures were developed to control the generation and migration of the landfill leachate. Locations of the landfill structures (surface-water diversion ditch, groundwater intercept system, and slurry walls) constructed as interim response measures that still exist are shown in Figure 2-1 and described in detail in the OU 7 Final Work Plan (DOE, 1994a).

Records indicate that some hazardous waste was disposed at the landfill; therefore, it was designated as an interim status Resource Conservation and Recovery Act (RCRA) regulated unit and included in the Part B permit application for RFETS.

### **2.3 Characteristics of the Seep at SW097**

The existing leachate collection system at the landfill is only partially effective. Between 1977 and 1981, portions of the leachate collection system were buried during landfill expansion. Although the intercept trench is effective in keeping leachate within the northern, southern, and western limits of the landfill, there is a seep along the eastern boundary of the landfill just above the pond.

Surface water sampling station SW097 is located where the water seeps from the landfill into the pond. The physical area of the seepage face is believed to vary over the course of the year. Based on visual observations, however, the maximum seep width is estimated at 8 feet.

Historical data presented in Table 2-1 were used to estimate an average flow rate at the seep. Specific information on the method of measurement and the relationship to storm events for most of these data is not available. Using RFETS precipitation data, no relationship between storm events and measured high flows shown in the table could be established. Thus, disregarding measurements believed to be erroneous, the average flow at the seep is estimated to be 3.6 gallons per minute (gpm).

**Table 2-1  
Historical Seep Flow Rates at SW097**

Date of Measurement	Flow Rate (gpm)	Flow Rate (cfs)
06/16/88	2.2	0.005
04/06/89	26.9 <sup>1</sup>	0.06 <sup>1</sup>
05/19/89	0.0	0.0
06/20/89	0.0	0.0
07/07/89	3.6	0.008
08/02/89	4.0	0.009
09/06/89	2.2	0.005
10/09/89	24.7 <sup>1</sup>	0.05 <sup>1</sup>
11/07/89	1.8	0.004
12/05/89	1.8	0.004
08/29/90	6.7 <sup>2</sup>	0.015 <sup>2</sup>
12/17/92	4.48	0.01
01/25/93	4.48	0.01
02/26/93	10.32	0.023
03/24/93	04.48	0.01
03/29/93	4.48	0.01
<b>Average</b>	<b>3.61</b>	

<sup>1</sup> Believed to be an erroneous flow measurement. Not included in calculation of average flow.

<sup>2</sup> Measured using a Palmer-Bowlus flume.

**Definitions:**

cfs: cubic feet per second  
gpm: gallons per minute

Chemicals in the seep that exhibit concentrations above background include total and dissolved metals, radionuclides, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) (DOE, 1994a).

The East Landfill Pond exhibits typical wetland vegetation as discussed in the potential ARARs section (Section 3.6) of this PAM.

## **2.4 Other Actions To Date**

A Phase I RCRA Facility Investigation/Remedial Investigation (RFI/RI) was conducted at OU 7 in 1992 and 1993 to characterize the site features, describe contaminant sources, and determine the nature and extent of contamination. Prior to the completion of Phase I, the focus of the investigations changed as a result of the adoption of a presumptive remedy strategy.

This PAM and the forthcoming IM/IRA for OU 7 are based on use of presumptive remedies as a method to streamline site investigation and remedial action selection based on historical data from successful remedial actions at similar sites. Source containment is the designated presumptive remedy for Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) municipal landfills (EPA, 1993). The containment presumptive remedy consists of the following elements:

- institutional controls
- landfill cap
- landfill gas control (and treatment if necessary)
- source area groundwater control to contain plume
- leachate collection and treatment

The proposed remedial action, collection and treatment of seep water, is compatible with source containment as a presumptive remedy for the landfill.

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### 3. PROPOSED ACTION

A description of the proposed action is presented in this section. Waste management considerations, consistency with long-term actions, and potential ARARs are also discussed.

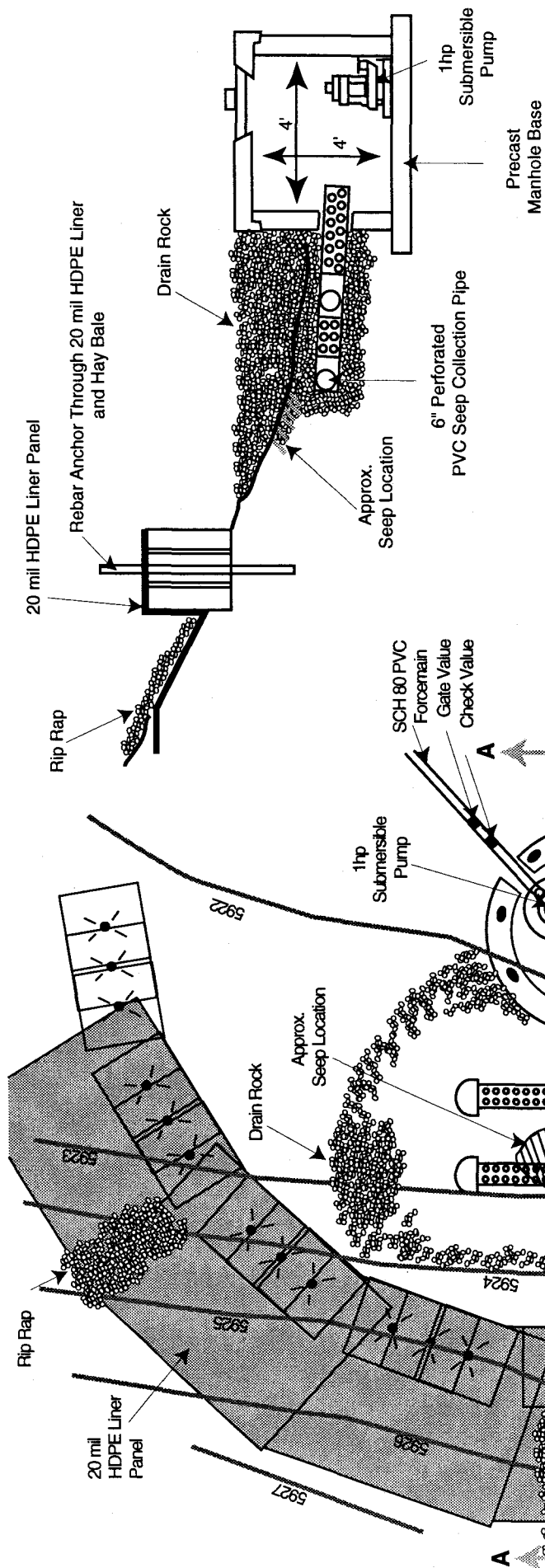
#### 3.1 Description

The seep collection and storage facility, shown in Figure 3-1, will consist of a temporary seep collection system, transmission forcemain, and permanent storage facility. The system will intercept and contain seep water. This action is not intended to collect all flows leaching from the landfill and entering the pond. Some seepage may bypass or overflow the collection system, but these flows will be addressed by a downstream collection system to be installed during landfill closure.

The seep water will be collected at SW097 with a temporary system, including 6-inch perforated PVC collection pipe, drain rock, a precast manhole base section, and a submersible pump. As shown in Figure 3-2, the 6-inch perforated PVC collection pipe will be placed just downstream of the seep and backfilled with drainrock to direct the seep flow to the precast manhole. A 1-horsepower pump will deliver the flow to the storage facility via a 2-inch single wall PVC forcemain. At an average influent flow of 3.6 gpm and an estimated pumping rate of 20 gpm, the pump will cycle approximately four times per hour. Power will be run from the DOE firing range to the storage area as shown in Figure 3-1.

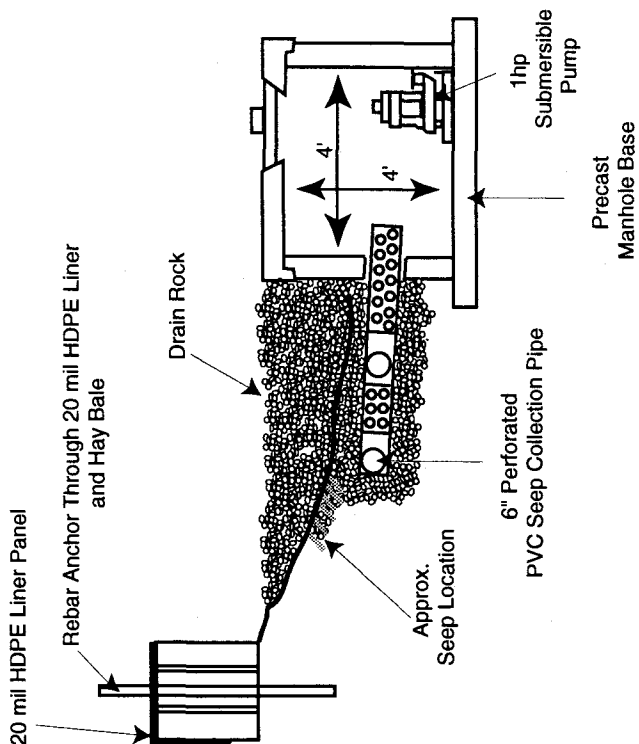
A temporary diversion dike consisting of hay bales, liner material, and rip rap will be placed upstream of the seep to prevent surface water runoff and sediments from entering the seep collection system (Figure 3-2).

Two double contained crosslink polyethylene tanks will provide a storage capacity of 13,000 gallons each. At an average flow of 4 gpm, the two tanks have a combined capacity of 4.5 days. The stored seep water will be transported as necessary to the designated treatment facility by tanker truck. In the event the tanks reach maximum capacity, a high-level alarm will shut off the sump pump and seep flow will back up in the manhole.



### Section A-A

Scale: 1" = 4'



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## Temporary Seep Collection Details

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Figure 3-2

The seep water will be trucked to the appropriate OU 1, OU 2, or proposed sitewide treatment facilities. The designation of the facility will be made by DOE prior to actual disposal based on regulatory input and approval.

The OU 1 facility consists of ultraviolet oxidation and ion exchange units as shown in Figure 3-3. The OU 2 facility includes chemical precipitation/filtration and granular activated carbon (GAC) units and is shown in Figure 3-4. The proposed sitewide facility is a combination of OU 1, OU 2, new pretreatment facilities, and additional storage capacity. A schematic of the proposed treatment schemes is available at the proposed sitewide treatment facility that may be used to treat the seep water is presented in Figure 3-5.

Discussions with treatment facility operators indicate that each of the facilities has the capacity and the capability to effectively treat the chemicals found in the seep. However, no acceptance criteria or removal efficiencies for the proposed sitewide treatment facility are available at this writing. The criteria would depend on the treatment train and likely be a combination of the OU 1 and OU 2 criteria with modifications for the new pretreatment facilities.

The following assumptions are incorporated into the development of the PAM:

- Drainage of the pond will occur prior to construction of the seep collection system.
- Design flows are 4 gpm average and 7 gpm maximum.
- The pretreatment facility at OU 1 will be operational when construction of the collection system is complete.

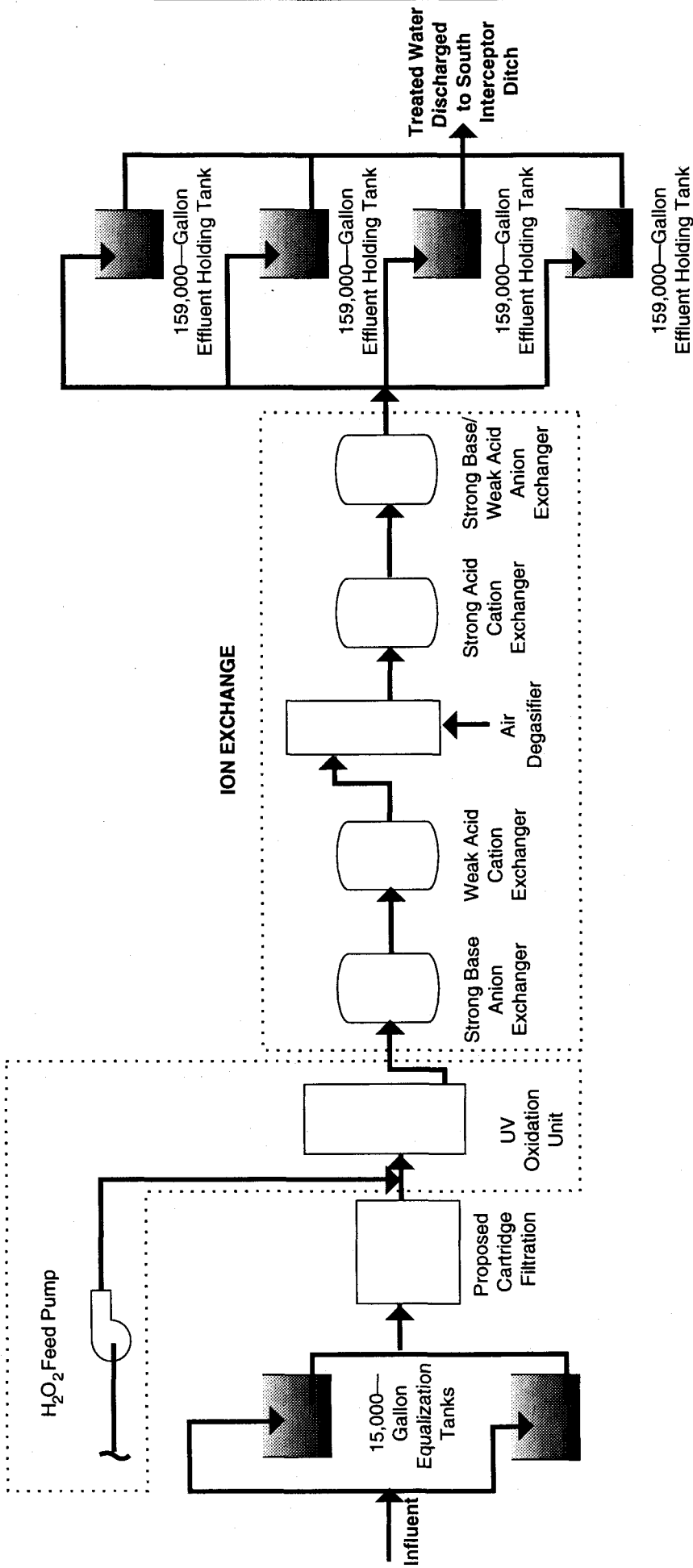
### 3.2 Design

The Title II (95%) design for the OU 7 seep collection system will include detailed drawings and specifications of the temporary seep collection system and permanent storage facility.

### 3.3 Waste Management Considerations

Approximately 5 cubic yards of material excavated during construction will be disposed at the OU 7 landfill. Although minimal dewatering will be required, any water from dewatering during construction will be pumped to the East Landfill Pond.

## UV OXIDATION



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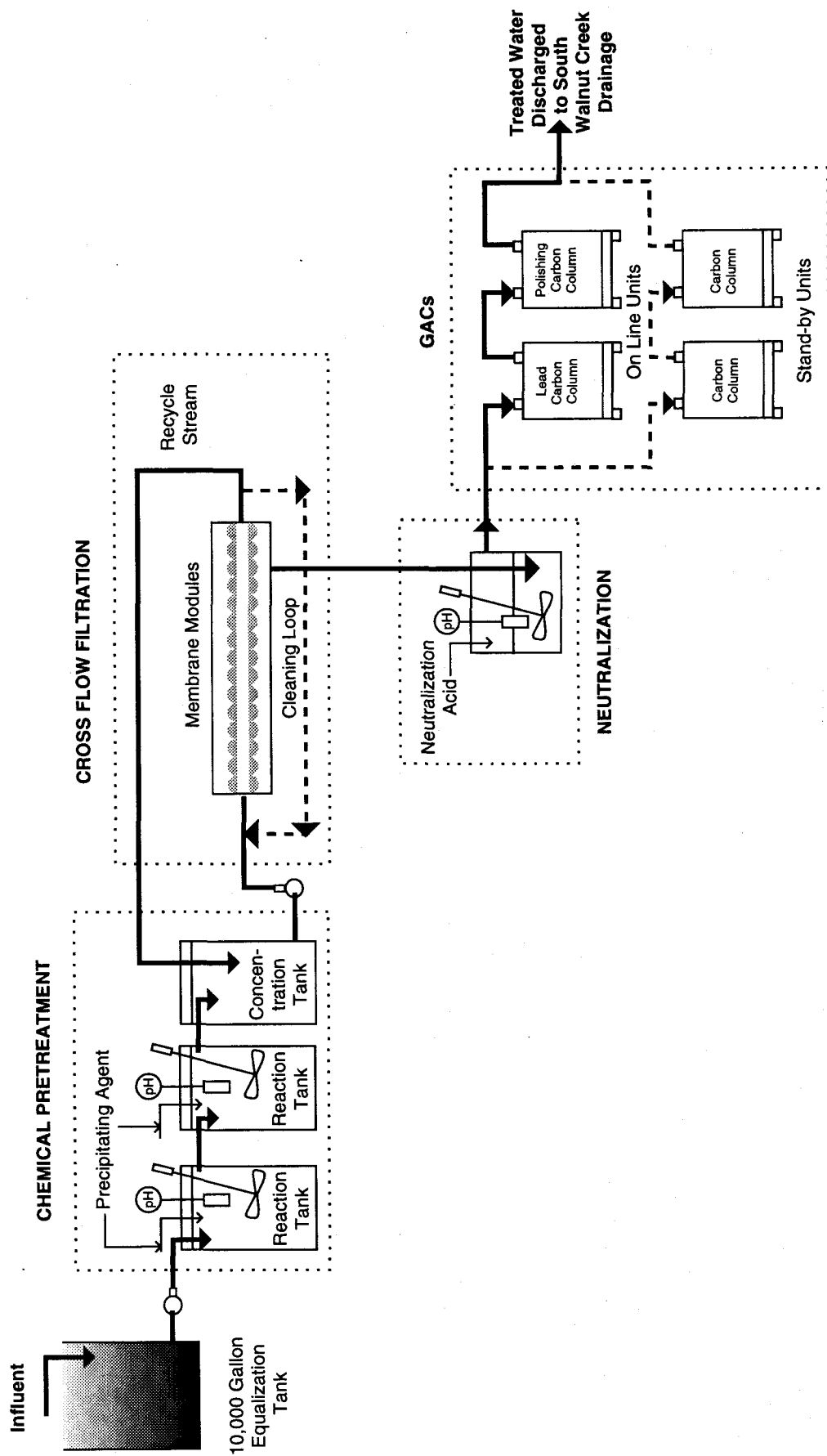
## OU 1 Groundwater Treatment System

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Figure 3-3





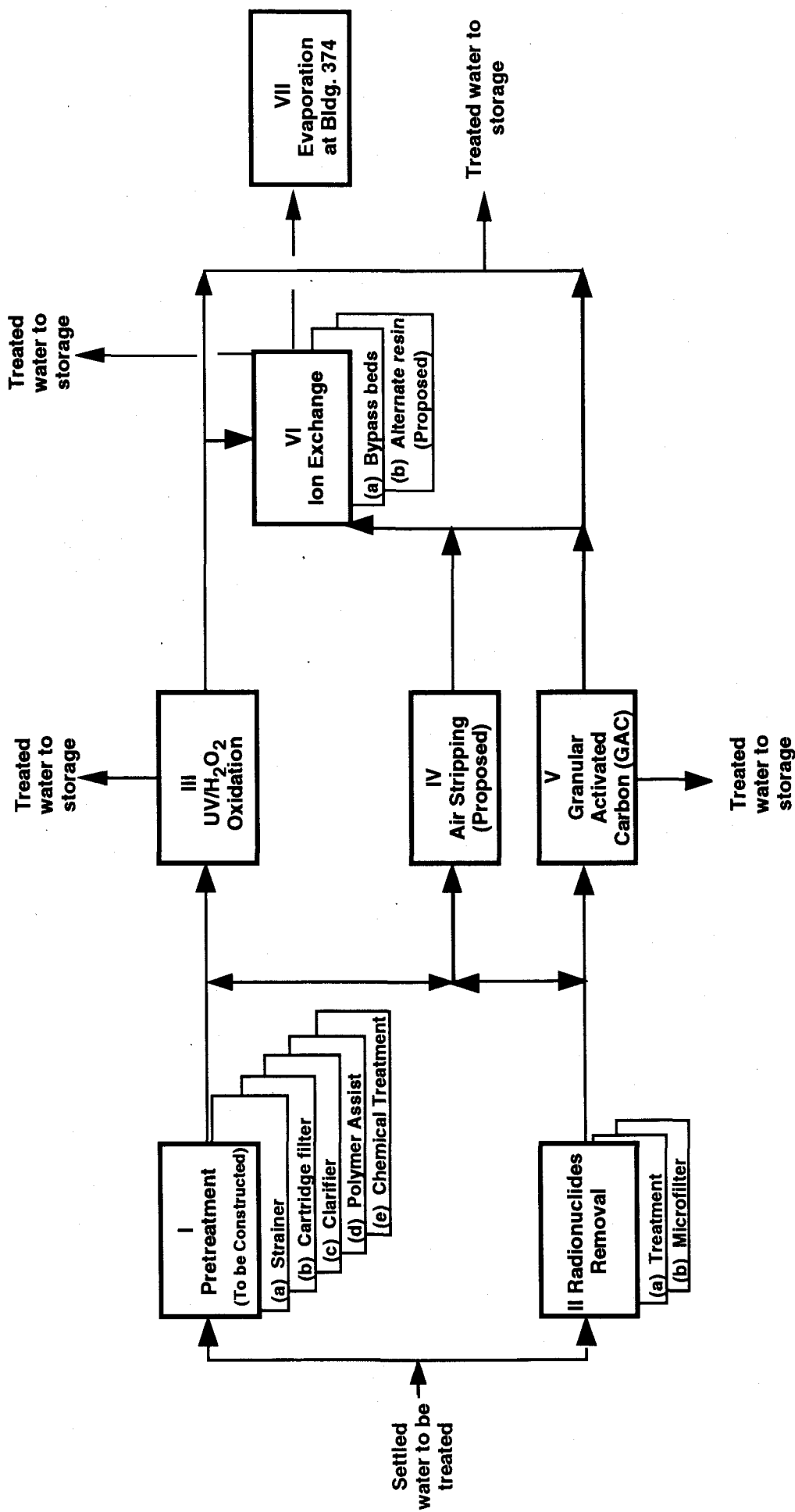
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## OU 2 Groundwater Treatment System

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Figure 3-4



#### NOTES:

1. Treatment path for OU 7 seep to be determined by characterization or bench testing.
2. No provision is shown for removal of free product.
3. Storage is used to verify treatment before release.
4. Granular activated carbon can also be used as final polishing step.

Source: Danzberger & Associates, 7/20/94

U.S. Department of Energy  
Rocky Flats Environmental Technology Site, Golden, Colorado

### Proposed OU 1/OU 2 Water Treatment Schemes

Proposed Action Memorandum

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Figure 3-5

### 3.4 Consistency with Long-Term Actions

The proposed action is designed with permanent storage tanks located outside the proposed extent of the cap so that they can be used for groundwater storage during post-closure remediation.

### 3.5 Evaluation of Alternatives

Three alternatives to the proposed action were evaluated in terms of effectiveness, implementability, and cost. The *Technology Literature Research* (EG&G, 1994a) identified three collection technologies for the landfill seep: extraction wells, a collection sump, and subsurface drains. The "no action" alternative was not considered, except as a baseline for comparison, because action is mandated under the Statement of Resolution on the Pondwater IM/IRA by the Senior Executive Committee of the IAG.

Of the three technologies, the collection sump was retained because it is a simple, low-cost method that can easily address the low flows. Extraction wells and subsurface drains were eliminated because limited hydrogeologic information was available for design. Further, both would draw groundwater in addition to seep water, thus increasing the volume of water and the overall cost. In addition, both would require a downgradient barrier to prevent the collection of downstream water. Because it requires a minimum amount of excavation and construction activity, the collection sump also had the lowest environmental impact.

### 3.6 Potential ARARs

Potential ARARs for OU 7 are discussed in detail in *Potential Applicable or Relevant and Appropriate Requirements for Operable Unit No. 7* (EG&G, 1994b).

EPA guidance directs that cleanup actions presume that groundwater be considered a potential source of drinking water unless site-specific factors indicate otherwise. Therefore, federal and state chemical-specific water standards have been listed as potential ARARs for OU 7. They include the following:

- Safe Drinking Water Act maximum contaminant levels (MCLs)
- RCRA groundwater protection standards
- Colorado Water Quality Control Act surface-water standards (general and site-specific)

- Colorado Water Quality Control Act groundwater standards (general and site-specific)
- Colorado primary drinking water regulations

The area along the shoreline of the East Landfill Pond has been designated as a wetland by the U.S. Army Corps of Engineers (COE, 1994). Tall marsh occurs on the edge of the pond; short marsh occurs north and south of the pond throughout the spray evaporation areas. Consequently, the Clean Water Act Section 404 permitting requirements and 10 CFR 1022 have been identified as potential ARARs.

The proposed action is not required to comply with the Floodplain Environmental Review Requirements in 10 CFR 1022, because the floodplains at RFETS do not meet the definition in the regulation (DOE, 1994b).

The Endangered Species Act; Bald and Golden Eagle Protection Act; and the Colorado Nongame, Endangered or Threatened Species Conservation Act have all been identified as potential ARARs because of the existence of regulated species under those acts in and around RFETS. No studies address the presence of wildlife at OU 7; however, other studies measuring the presence of plant and animal life at RFETS indicate that several regulated species are located at the site. OU 7 has been identified as potential habitat for Preble's Meadow Jumping Mouse, which is a candidate for listing. Neither RFETS nor OU 7 has been identified as critical habitat for any regulated species (DOE, 1994a).

Proposed performance standards for treatment of the collected seep water are presented in Table 3-1 for chemicals in the seep at SW097 that were found above background. Where no ARARs or to-be-considered (TBCs) exist, ten times the EPA Contract Laboratory Program (CLP) analytical detection limits are suggested performance standards.

Table 3-1  
Proposed Performance Standards

Total Metals	Ave. Conc. (µg/L)	Max. Conc. (µg/L)	OU 1 Treatment Facility (µg/L)	OU 2 Treatment Facility (µg/L)	Potential ARAR (µg/L)	TBC (µg/L)	PQL (µg/L)	OU 7 Proposed Performance Standard (µg/L)	Reference	Comment
Antimony	22	60.4	60	64	14			14	5 CCR 1002-8 state standard drinking water	Standard 30-day average
Barium	640	1,550	1,000	1,000	1,000			1,000	5 CCR 1002-8 state standard human health: CWA-AWQC for protection of human health, water and fish ingestion	
Calcium <sup>1</sup>	151,000	212,000	N/A	N/A	N/A	N/A		N/A		
Iron	80,510	155,000	300		13,200/1,000			13,200	5 CCR 1002-8 Segment 5 standard. Temporary modification to Segment 5 until April 1, 1996	1,000 is a Segment 4 and 5 standard. (Standard is for 1-day)
Lithium	48	107	2,500	NS						No federal or state surface or water quality standards exist. Suggest a value of 1,000 as 10 times the CLP Detection Limit <sup>2</sup>
Magnesium <sup>1</sup>	34,719	49,000	N/A	N/A	N/A	N/A		N/A		
Manganese	1,611	2,490	50	50	1,000			1,000	Segment 4 and 5 standard	Standard is 30-day average
Potassium <sup>1</sup>	6,436	11,700	N/A	N/A	N/A	N/A		N/A		
Silicon <sup>1</sup>	13,508	44,000	N/A	N/A	N/A	N/A		N/A		
Sodium <sup>1</sup>	71,367	110,000	N/A	N/A	N/A	N/A		N/A		
Strontium	919	1,370	NS	NS						No federal or state surface or water quality standards exist. Suggest a value of 2,000 as 10 times the CLP Detection Limit <sup>2</sup>

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Table 3-1 (Continued)

Total Metals (Continued)	Ave. Conc. (µg/L)	Max. Conc. (µg/L)	OU 1 Treatment Facility (µg/L)	OU 2 Treatment Facility (µg/L)	Potential ARAR (µg/L)	TBC (µg/L)	PQL (µg/L)	OU 7 Proposed Performance Standard (µg/L)	Reference	Comment
Tin	67	306	NS	NS						No federal or state surface or water quality standards exist. Suggest a value of 1,000 as 10 times the CLP Detection Limit <sup>2</sup>
Zinc	2,945	16,000	2,000	50	350/ 2,000			350	350 µg/L is Segment 5 standard. 350 µg/L is the temporary modification to Segment 5 until April 1, 1996	2,000 µg/L is WQCC basic surface water standard for agriculture (30-day average)

Radionuclides	Ave. Conc. (pCi/L)	Max. Conc. (pCi/L)	OU 1 Treatment Facility (pCi/L)	OU 2 Treatment Facility (pCi/L)	Potential ARAR (µg/L)	TBC (µg/L)	PQL (µg/L)	OU 7 Proposed Performance Standard (µg/L)	Reference	Comment
Gross Beta	11	17	50	19	4 <sup>3</sup>			4 <sup>3</sup>	4 is mrem/yr. SDWA MCL	
Strontium-89,90	1.3	4.06	8	8	8			8	SDWA MCL	
Tritium	349	1,500	20,000	500		1,000		1,000	DOE DCG Value	
Uranium-235	0.1	0.7	40	10		600		600	DOE DCG Value	

Water Quality Parameters	Ave. Conc. (µg/L)	Max. Conc. (µg/L)	OU 1 Treatment Facility (µg/L)	OU 2 Treatment Facility (µg/L)	Potential ARAR (µg/L)	TBC (µg/L)	PQL (µg/L)	OU 7 Proposed Performance Standard (µg/L)	Reference	Comment
Nitrite	30.33	63	1,000	1,000	500			500	5 CCR 1002-8 Segment 4 and 5 standard	Standard is 1-day

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Table 3-1 (Continued)

Volatile Organic Compounds	Ave. Conc. (µg/L)	Max. Conc. (µg/L)	OU 1 Treatment Facility (µg/L)	OU 2 Treatment Facility (µg/L)	Potential ARAR (µg/L)	TBC (µg/L)	PQL (µg/L)	OU 7 Proposed Performance Standard (µg/L)	Reference	Comment
1,1-Dichloroethane	6	10	5	5		59	5 <sup>4</sup>	59	6 CCR 1007-3, Section 268.43	
2-Butanone	12	76	NS	NS		280	100 <sup>4</sup>	280	6 CCR 1007-3, Section 268.43	
2-Hexanone	5	10	NS	NS			50 <sup>4</sup>			No federal or state surface or water quality standards exist. Suggest a value of 100 as 10 times the CLP Detection Limit <sup>2</sup>
4-Methyl-2-pentanone	11	87	NS	NS		140	50 <sup>4</sup>	140	6 CCR 1007-3, Section 268.43	
Acetone	33	220	50	10		280	100 <sup>4</sup>	280	6 CCR 1007-3, Section 268.43	
Benzene	2	5	NS	NS	1		5 <sup>4</sup>	1	5 CCR 1002-8, State Standard for Water Supply	
Carbon Disulfide	3	6	5	5		14	5 <sup>4</sup>	14	6 CCR 1007-3, Section 268.43	
Chloroethane	22	57	NS	NS		270	10 <sup>4</sup>	270	6 CCR 1007-3, Section 268.43	
Chloromethane	5	10	NS	NS		190	10 <sup>3</sup> /1	190	5 CCR 1002-8, State Standard for Water and Fish	
Ethylbenzene	13	18	NS	NS	680		5 <sup>4</sup> /10	680	5 CCR 1002-8, State Standard for Water Supply	
Methylene Chloride	14	190	5	5	4.7		5 <sup>4</sup> /1	4.7	5 CCR 1002-8, Segment 4 and 5 standard	
Tetrachloroethene	2	5	5	1	0.08		5 <sup>4</sup> /1	1	5 CCR 1002-8, 3.1.11 PQL	0.08 is Segment 4 and 5 standard
Toluene	38	88	2,000	NS	1,000		5 <sup>4</sup> /1	1,000	SDWA MCL	
Total Xylenes	14	25	NS	NS	10,000		5 <sup>4</sup>	10,000	SDWA MCL	
Trichloroethene	2	5	5	5	5/66		5 <sup>4</sup> /1	66	5 CCR 1002-8, Segment 5 standard. Temporary modification to Segment 5 until April 1, 1996	5 µg/L=5 CCR 1002-8, State standard for water supply



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Table 3-1 (Continued)

Volatile Organic Compounds (Continued)	Ave. Conc. (µg/L)	Max. Conc. (µg/L)	OU 1 Treatment Facility (µg/L)	OU 2 Treatment Facility (µg/L)	Potential ARAR (µg/L)	TBC (µg/L)	PQL (µg/L)	OU 7 Proposed Performance Standard (µg/L)	Reference	Comment
Vinyl Acetate	7	49	NS	NS			5 <sup>1</sup>			No federal or state surface or water quality standards exist. Suggest a value of 500 as 10 times the Method 8240 Detection Limit
Vinyl Chloride	5	11	NS	2	2		10 <sup>1/2</sup>	2	5 CCR 1002-8, State Standard for Water Supply	

Semivolatile Organic Compounds	Ave. Conc. (µg/L)	Max. Conc. (µg/L)	OU 1 Treatment Facility (µg/L)	OU 2 Treatment Facility (µg/L)	Potential ARAR (µg/L)	TBC (µg/L)	PQL (µg/L)	OU 7 Proposed Performance Standard (µg/L)	Reference	Comment
2,4-Dimethylphenol <sup>3</sup>	5	10	NS	NS	2,120		50	2,120	5 CCR 1002-8 State Standard for Aquatic Life	Acute value
2-Methylnaphthalene <sup>3</sup>	16	23	NS	NS						Not listed in 40 CFR 302.4 or 6 CCR 1007-3 Pt. 261-Appendix VII. Suggest a value of 100 as 10 times the CLP Detection Limit <sup>2</sup>
4-Methylphenol <sup>3</sup>	4	10	NS	NS						Not listed in 40 CFR 302.4 or 6 CCR 1007-3 Pt. 261-Appendix VII. Suggest a value of 100 as 10 times the CLP Detection Limit <sup>2</sup> (Note: PPRG for residential surface water swimming is 1.40E+02 mg/L)
Acenaphthene	3	3	NS	NS	0.0028		10	10	5 CCR 1002-8, 3.1.11 PQL	0.0028 is Segment 4 and 5 standard



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Table 3-1 (Continued)

Semivolatile Organic Compounds (Continued)	Ave. Conc. (µg/L)	Max. Conc. (µg/L)	OU 1 Treatment Facility (µg/L)	OU 2 Treatment Facility (µg/L)	Potential ARAR (µg/L)	TBC (µg/L)	PQL (µg/L)	OU 7 Proposed Performance Standard (µg/L)	Reference	Comment
Bis(2-ethylhexyl)phthalate	5	12	NS	NS	1.8		10	10	5 CCR 1002-8, 3.1.11 PQL	1.8=WQCC basic surface water standard
Dibenzofuran <sup>3</sup>	1	2	NS	NS						Not listed in 40 CFR 302.4 or 6 CCR 1007-3 Pt. 261 - Appendix VII. Suggest a value of 100 as 10 times the CLP Detection Limit <sup>2</sup>
Diethyl Phthalate	3	10	NS	NS	23,000		10	23,000	5 CCR 1002-8, State Standard for Water and Fish	
Fluorene	2	3	NS	NS	0.0028		10	10	5 CCR 1002-8, 3.1.11 PQL	0.0028 is Segment 4 and 5 standard
Naphthalene	18	22	NS	NS	0.0028		10	10	5 CCR 1002-8, 3.1.11 PQL	0.0028 is Segment 4 and 5 standard
Phenanthrene	4	5	NS	NS	0.0028		10	10	5 CCR 1002-8, 3.1.11 PQL	0.0028 is Segment 4 and 5 standard

Source (EG&G, 1994c):

- Nutrient species and will not be considered for treatment.
- Matrix dependent. Detection limit may vary by method.
- Value in mrem/yr.
- PQL from 6 CCR 1007-3 Appendix IX. Otherwise, PQLs are from 5 CCR 1002-8.
- These constituents are not listed either in 40 CFR 302.4 or 6 CCR 1007-3 Part 261 - Appendix VII and therefore are not required to be addressed under a CERCLA Remedial Action.

Note: Shaded compounds are below the given ARARs at OU 7.

Definitions:

AWQC Ambient Water Quality Criteria  
CLP EPA Contract Laboratory Program  
CWA Clean Water Act  
DCG Derived Concentration Guide  
DOE U.S. Department of Energy  
MCL Maximum Contaminant Level  
N/A Not applicable  
NS No standard  
PQL Practical Quantitation Limits  
SDWA Safe Drinking Water Act  
TBC To-be-considered  
WQCC Water Quality Control Commission

Category

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Approved By:

Title:  
Section 4

\_\_\_\_\_  
Name

\_\_\_\_ / \_\_\_\_ / \_\_\_\_  
Date

#### 4. ENVIRONMENTAL IMPACTS

The potential environmental impacts of the proposed action are discussed in the following sections.

##### 4.1 Air Quality

There are two possible air quality impacts as a result of the proposed action: potential VOC releases during construction and collection, storage, and treatment of the seep water and fugitive dusts as a result of excavation and construction activities. Both these impacts will be minimal in comparison to normal operational activity at RFETS. Emissions would be controlled during construction by use of appropriate dust suppression methods as specified in the Health and Safety Plan.

##### 4.2 Water Quality

The proposed action will reduce the contaminant loading to the East Landfill Pond. The seep is believed to be the source of the radionuclides, VOCs, and SVOCs present in pond sediments (DOE, 1994a). In addition, collected waters will be treated to meet ARARs. Although construction activities may temporarily increase erosion, the stormwater diversion dike is designed to minimize erosion at the collection sump.

##### 4.3 Terrestrial Impacts

Plant and animal life may be negatively impacted by the proposed action. As discussed in Section 3.6, wetlands have been identified along the shoreline of the East Landfill Pond. Approximately 75 square feet of wetlands will be impacted by the proposed action. However, replacement of damaged wetlands will be addressed under the Landfill Closure IM/IRA Decision Document, resulting in no net impact.

OU 7 has been identified as potential habitat for Preble's Meadow Jumping Mouse, which is a candidate for listing. However, neither RFETS nor OU 7 has been identified as critical habitat for any regulated species (DOE, 1994a).

Prior to construction of the seep collection system, DOE will ensure the protection of plant and wildlife species of concern by evaluation of proposed field activities using procedure 1-DO6-ERP-END.03, "Identification and Protection of Threatened, Endangered, and Special-Concern Species."

#### **4.4 Archaeology and Historic Sites**

No archaeological or historic sites have been identified at OU 7.

#### **4.5 Short- and Long-Term Productivity**

Land adjacent to the seep is presently an operating landfill. The landfill will operate until it is closed in 1997. The area, including the collection system, will be capped as part of landfill closure. The proposed action will not affect present or future use of the site. In addition, equipment and materials will be reused to support final closure wherever possible.

#### **4.6 Personnel Exposures**

The seep water may be a source of contamination for both surface water and groundwater, which, in turn, provide potential pathways for further migration. Exposure scenarios include dermal contact and ingestion by RFETS workers and offsite residents in downgradient communities. Substances of concern include the organics, heavy metals, and radionuclides listed in Table 3-1.

#### **4.7 Commitment of Resources**

The scope of the proposed action is small, and the material and human resources necessary for construction and operation are likewise relatively small. No significant commitments of valuable resources are involved.

#### **4.8 Transportation Impacts**

The impacts on health from transportation during the proposed action include the potential for pollution and accident-related impacts. Transportation of construction materials will likely be limited to a 50-mile radius. Trucking of collected seep water to the designated treatment facility is estimated to total 10 miles per week. Transportation impacts are minimal.

#### **4.9 Cumulative Impacts**

Because of the small scope and interim nature of the proposed action, the cumulative negative impacts are minimal. Factors specified in the National Contingency Plan (NCP) Section 300.415(b)(2) indicate that a removal action is appropriate for the OU 7 seep to address threats to public health and welfare and the environment.

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## 5. PROJECT SCHEDULE

The accelerated schedule for the Seep Collection and Treatment PAM supersedes the Table 6 milestones in the IAG. The proposed milestone schedule is provided in Table 5-1.

**Table 5-1**  
**Proposed Action Milestone Schedule**

Milestone	Date
Submit PAM to CDPHE/EPA/Public	10/13/94
Receive Comments	11/14/94
Submit Final PAM & Response Summary to CDPHE/EPA/DOE	11/30/94
Approval of PAM	12/14/95
Begin Construction	05/15/95
Begin Seep Collection	08/16/95

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## 6. REFERENCES

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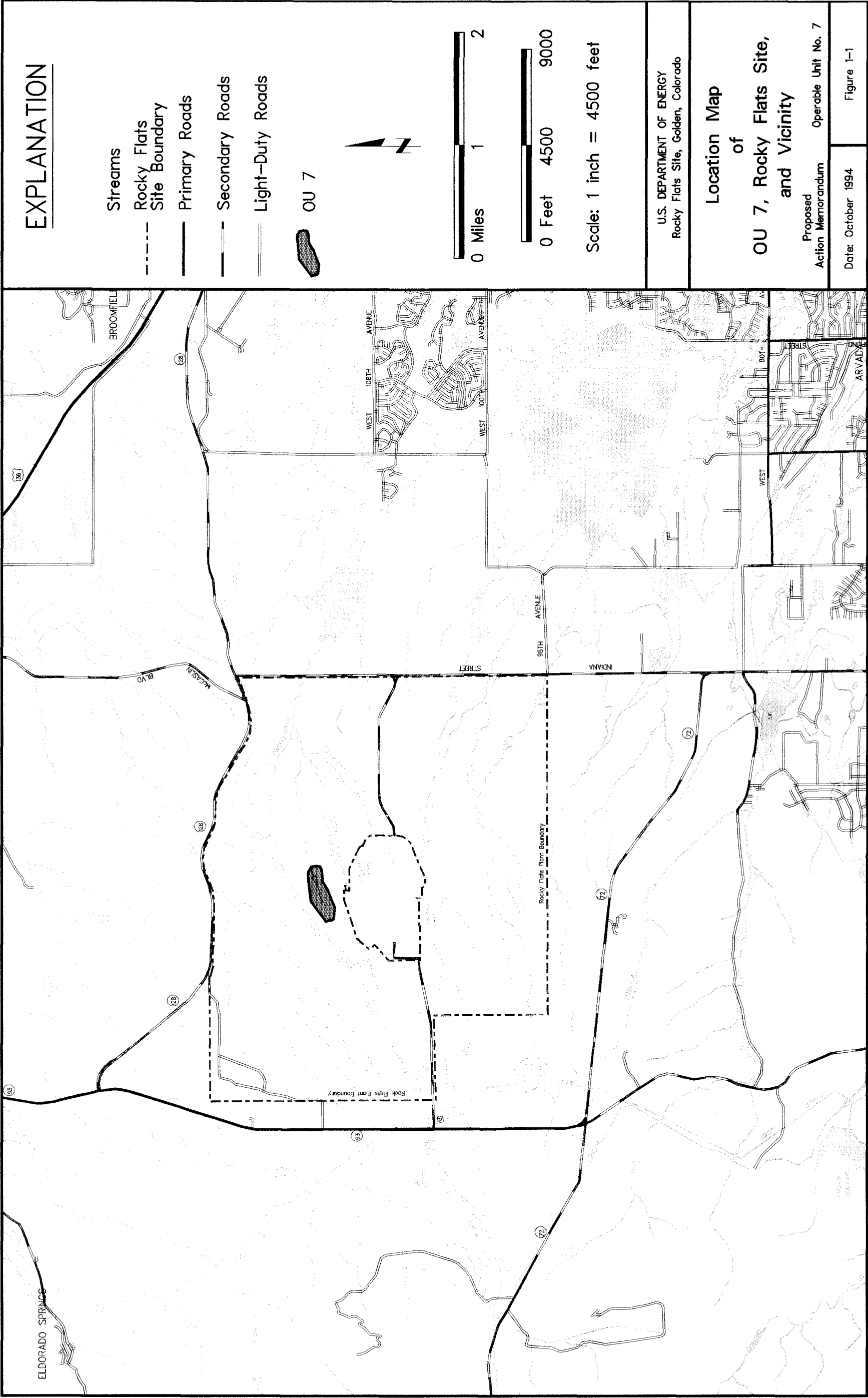
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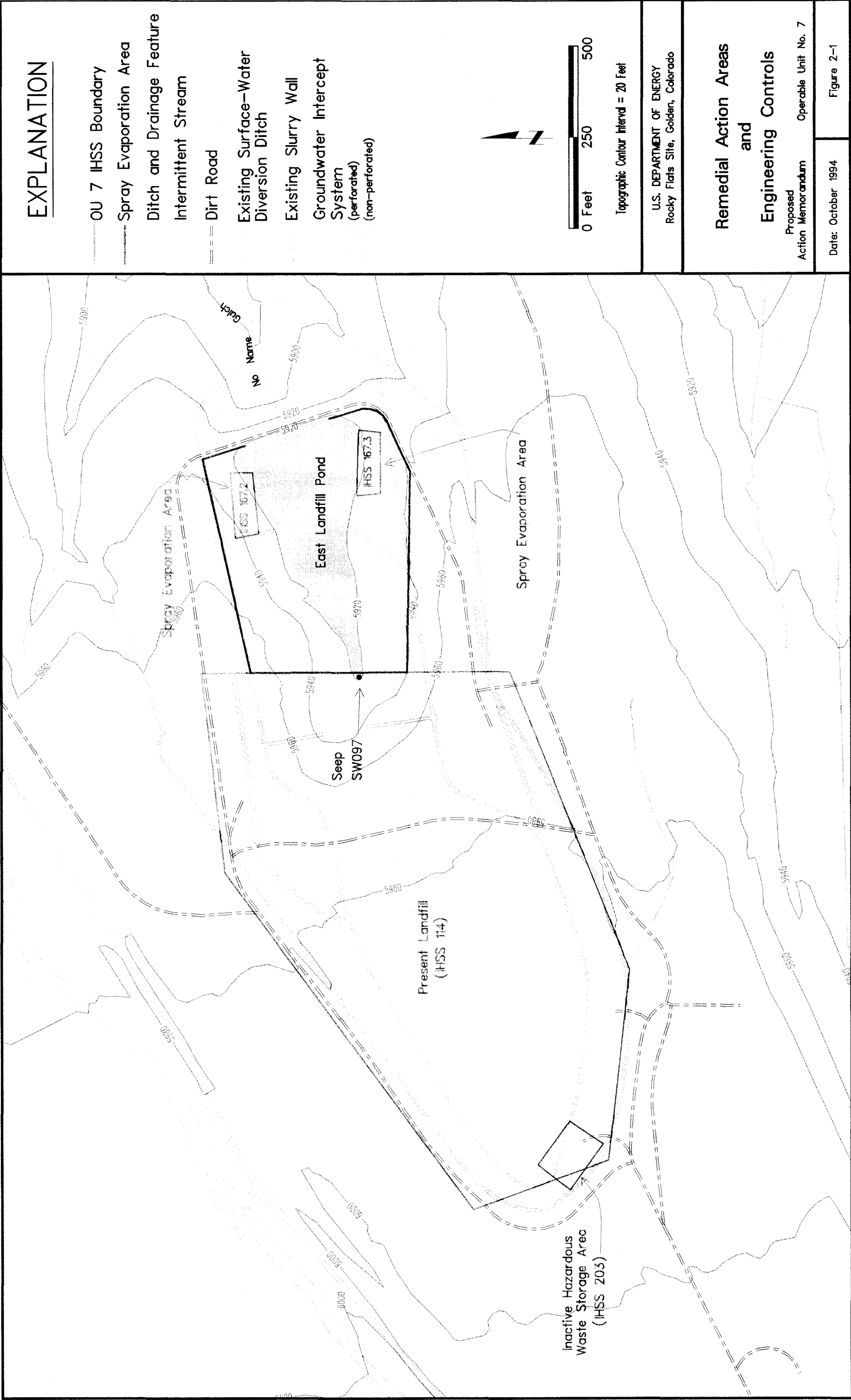
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EG&G. 1994b. Potential Applicable or Relevant and Appropriate Requirements for Operable Unit No. 7 - Present Landfill (IHSS 114) and Inactive Hazardous Waste Storage Area (IHSS 203). EG&G Rocky Flats, Inc., Golden, Colorado.

EG&G. 1994c. Personal Communication with Laura Brooks, EG&G. October 10, 1994.

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**EXPLANATION**

OU 7 IHSS Boundary

Ditch and Drainage Feature  
Intermittent Stream

== Dirt Road

Existing Surface-Water  
Diversion Ditch

Existing Slurry Wall

Groundwater Intercept  
System  
(perforated)  
(non-perforated)



Topographic Contour Interval = 20 Feet

U.S. DEPARTMENT OF ENERGY  
Rocky Flats Site, Golden, Colorado

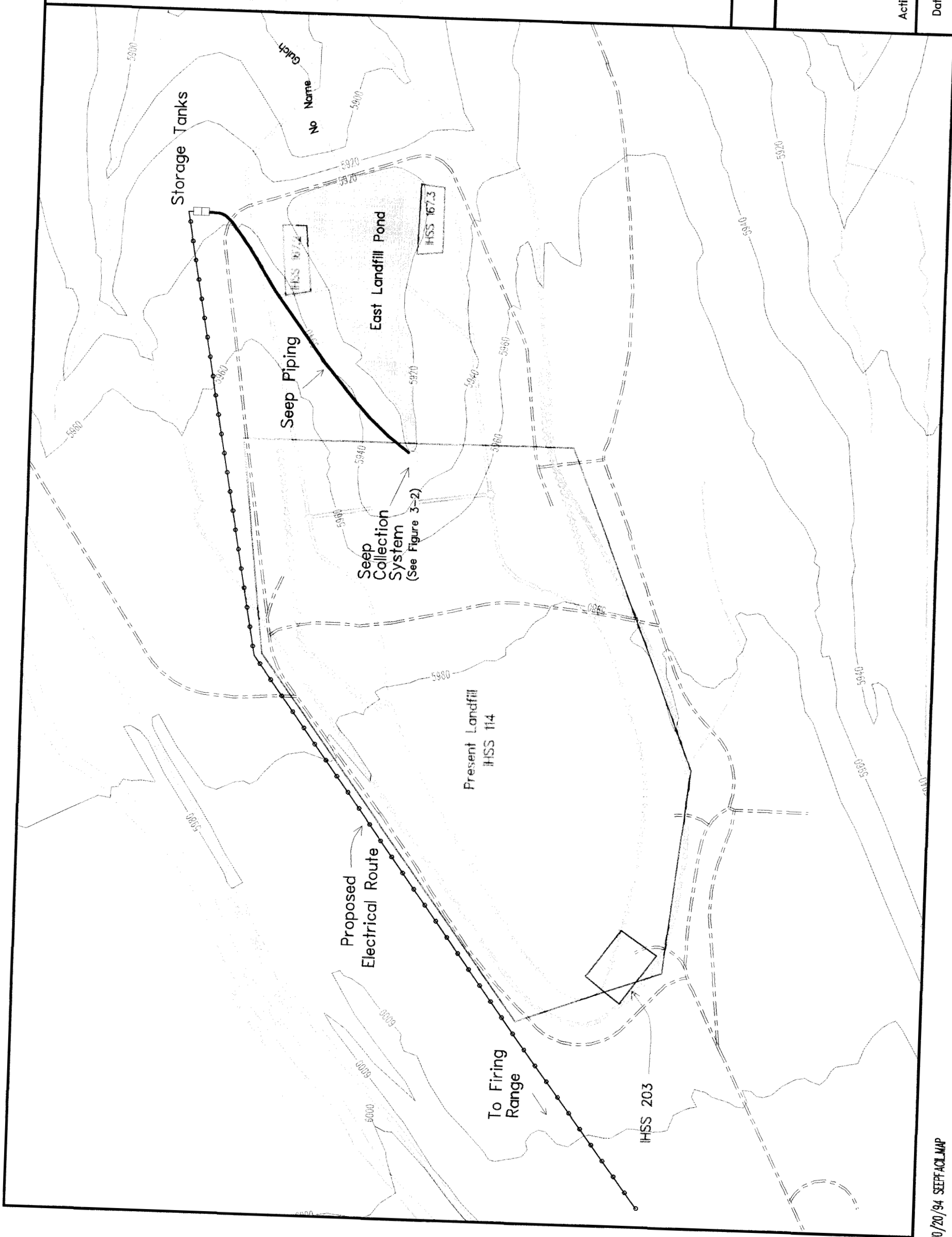
**Seep Collection  
Facility  
Plan View**

Proposed  
Action Memorandum

Operable Unit No. 7

Date: October 1994

Figure 3-1



10/20/94 SEEFACMAP